Integrated Mathematics III Reference Sheet

Formulas

z-score

$$z = \frac{\text{score} - \text{mean}}{\text{standard deviation}}$$

Quadratic Formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

General Equations

$Ax + By = C$

$y = mx + b$

$y - y_1 = m(x - x_1)$

$y = ax^2 + bx + c$

$(x - h)^2 + (y - k)^2 = r^2$

$f(x) = a(b)^x$

$f(x) = P(1 \pm r)^x$

Probability Formulas

Exclusive $P(A \text{ or } B) = P(A) + P(B)$

Inclusive $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$

Independent $P(A \text{ and } B) = P(A) \cdot P(B)$

Dependent $P(A \text{ and } B) = P(A) \cdot P(B|A)$

Conditional $P(B|A) = \frac{P(A \text{ and } B)}{P(A)}$

Logarithmic Change of Base Formula

$$\log_b a = \frac{\log a}{\log b} = \frac{\ln a}{\ln b}$$

Pythagorean Theorem

$a^2 + b^2 = c^2$

Combinations

$${}_nC_r = \frac{n!}{(n-r)!r!}$$

Permutations

$${}_nP_r = \frac{n!}{(n-r)!}$$

Interest Formulas

$I = prt$

$A = P\left(1 + \frac{r}{n}\right)^{nt}$

$A = Pe^{rt}$

Sequences

$a_n = a_1 + (n-1)d$

$a_1 = 1\text{st term}, a_n = a_{n-1} + d$

$a_n = a_1 r^{n-1}$

$a_1 = 1\text{st term}, a_n = ra_{n-1}$

Trigonometric Formulas

Law of Sines $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Law of Cosines $a^2 = b^2 + c^2 - 2bc \cos A$